

Evaluation of Latent Fingerprint Identification Technologies (ELFT)

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What Is ELFT?

- ✓ A series of open technology evaluations focused on the automated* (or automatable) components of latent fingerprint identification systems.
- ✓ An effort to improve latent fingerprint identification systems by reducing reliance on human examiners, and increasing accuracy, speed, and interoperability.

**NOTE: Humans ARE part of the end-to-end latent fingerprint identification process (including AFIS). However, ELFT is not intended to measure the accuracy of human based matching per se (examiners are only involved in data preparation and results validation)*

“Conventional” Fingerprints

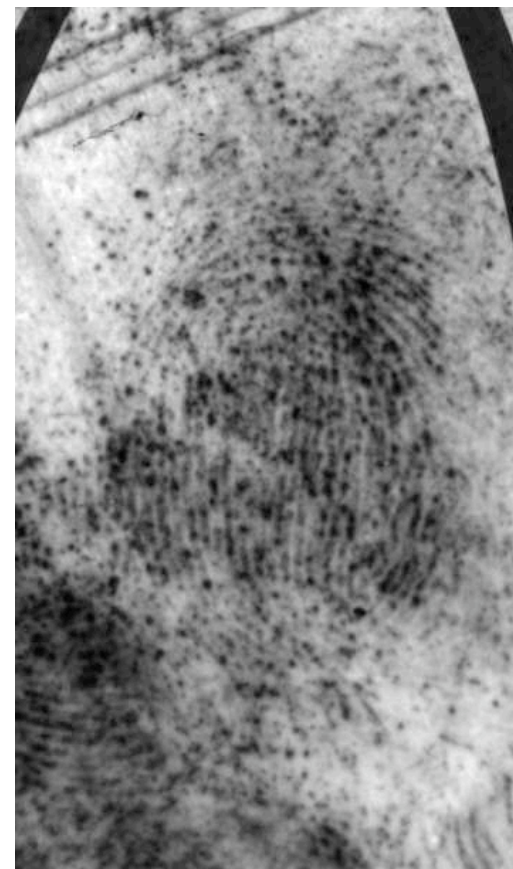
Rolled (ink capture)

Flat (ink capture)



Latent Fingerprint

(powder “lift”)



Goals

➤ **Greater Automation**

- Reduced case backlog and expanded case file utilization
- Reduced examiner workload (e.g. candidate list processing)
- Improved workflow (focus on “difficult” latents)

➤ **Greater accuracy and interoperability**

- More identifications (faster)
- Better watch-list performance (fewer false “hits”)
- Improved Cross-domain searches

➤ **New Capabilities**

- AFIS usage by non-experts
- Remote ID

Sponsors



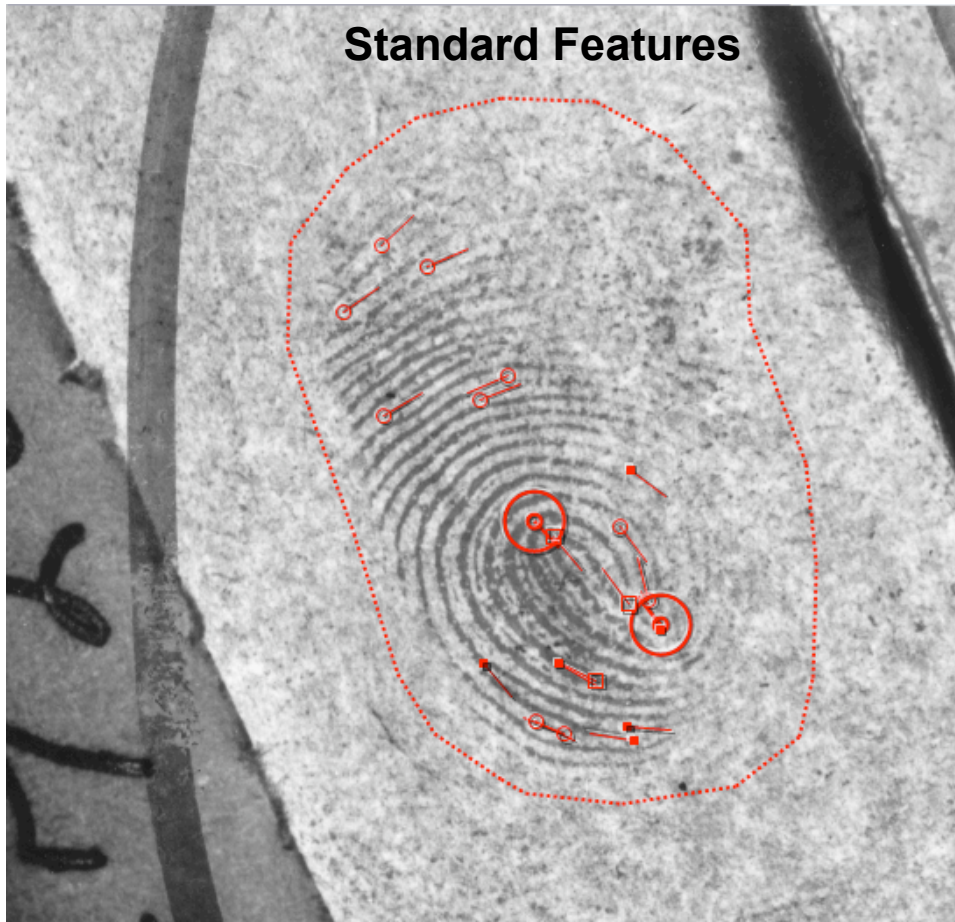
History

- Phase I Evaluation (2006-2007)
 - Small dataset; 11 participants; proof-of-concept
 - Phase II Evaluation (2008-2009)
 - AFEM (Automatic feature Extraction and Matching) algorithms
 - Workshop II (March '09); Results presented; Phase III planning
 - Public Report (April '09); ***Concluded AFEM viable for “high quality” images**
 - **ELFT-EFS Evaluation #1 (2009-2010)**
 - **Images alone (AFEM) vs Images + manual feature markup**
 - **Evaluates AFEM vs. manual markup; standard vs (multi-level) EFS markup; flat vs rolled exemplars; single vs multi-exemplars**
 - **“Public Challenge” Summer 2009; Self-run test, anonymous**
 - **Evaluation #1 (Fall 2009–Spring 2010); NIST-run, public results**
 - **Preliminary report January 2010**
- ➔ fingerprint.nist.gov/standard/cdeffs

Future Plans

- Evaluation #2 (May–June 2010)
 - New SDKs (same data / same requirements)
 - detailed performance results
 - miss analysis (In-person: March-April 2010)
 - re-test specified subtests
 - New participants (resources permitting)
 - More info:
 - ➔ fingerprint.nist.gov/latent
 - ➔ latent-efs@nist.gov

Standard Features



EFS (Extended Feature Set)

